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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,322	10/07/2003	Akihiko Morita	P/1250-263	9375

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EXAMINER

EDWARDS, LAURA ESTELLE

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,322

Applicant(s)

MORITA, AKIHIKO

Examiner

Laura Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-6, drawn to apparatus, classified in class 118, subclass 52.
- II. Claims 7-9, drawn to methods, classified in class 427, subclass 240.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used for a different process such as cleaning or purifying recirculated fluids not excluding gas.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Max Moskowitz on 8/22/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

Figures 17, 18, and 19A-19C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 6-8, Applicant recites the single driving element driving the partition to change volume ratio between the chambers "while the sum of the volumes of the first and second chambers is held constant" but it is unclear how the volumes of the chambers is held constant when the volume per chamber changes or differs. Clarification is necessary.

In claim 3, lines 3-4, it is unclear how the filter element provides communication between the first and second chambers without the pipe being positively recited as being connected or in communication with the first and second chambers. Clarification is necessary.

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In claim 4, Applicant recites a piping system, however, the pipe is not in the body of the claim but in the preamble such that it is unclear how the system functions as a piping system.

In claim 4, lines 3-7, Applicant provides for a switching element and an opening and closing element which relate to a mode of operation or maintenance of the system but it is unclear how these elements function as claimed without some type of controller being recited to effect said modes. Clarification is necessary.

In claim 4, line 3, "the operating mode" lacks antecedent basis.

For claim 4, lines 15-17, see the response above to claim 1, lines 6-8.

For claim 5, page 41, lines 10-12, see the response above to claim 1, lines 6-8.

In claim 5, page 41, lines 16-20, Applicant provides for a switching element and an opening and closing element which relate to a mode of operation or maintenance of the system but it is unclear how these elements function as claimed without some type of controller being recited to effect said modes. Clarification is necessary.

In claim 5, page 41, line 16, "the operating mode" lacks antecedent basis.

For claim 6, lines 15-17, see the response above to claim 1, lines 6-8.

In claim 6, lines 21-25, Applicant provides for a switching element and an opening and closing element which relate to a mode of operation or maintenance of the system but it is unclear how these elements function as claimed without some type of controller being recited to effect said modes. Clarification is necessary.

In claim 6, line 21, "the operating mode" lacks antecedent basis.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al (US 6,071,094).

Yu et al provide in combination with at least one acting element (25-27) for exerting a predetermined action on a chemical solution, a chemical pump for pumping said chemical solution through said acting element, comprising a pressure chamber (24) divided by a movable partition member (34) into a first chamber (31) and a second chamber (32); and a single driving element (36) for driving said partition member to reciprocate, thereby changing a volume ratio between said first chamber and said second chamber wherein chemical solution sucked and introduced into said first chamber by driving said partition member in a first direction is moved via said acting element (25) provided outside said pressure chamber into said second chamber by driving said partition member in a second direction, and is then discharged out of said second chamber by driving said partition member in said first direction again. While Yu et al suggest

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feeding and reloading the chemical solution in the pressure chamber to reduce foam or bubbles in the chemical solution via maintaining balanced pressure in both pump pressure chambers (see col. 1, lines 65 to col. 2, line 7, Yu et al are silent concerning the single driving element driving the partition member such that the sum of volumes of the first and second chambers are held constant. However, it would have been obvious to one of ordinary skill in the art to utilize at least one or more of the acting elements to provide in the two chambers a sum of constant volumes in the order to uniformly control the amount of chemical solution supplied to the dispensing nozzle.

As shown in Fig. 2, filter element (28) is provided in pipeline (L3) in fluid communication with acting element (27) to filter chemical solution prior to dispensing from the nozzle (29).

With respect to the chemical pump being incorporated into a piping system, Yu et al provide a piping system (L1-L3) including a first check valve (25) for allowing chemical solution to be introduced into the first chamber (31) to be purged of air bubbles, a second check valve (27) which directs the chemical solution out the second chamber (32) to the dispensing nozzle (29) and onto a supported wafer (not shown), and further includes a third check valve (26).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al (US 6,071,094) as applied to claims 1-5 above, and further in view of Akimoto (US 6,126,338).

Yu et al teach a semiconductor fabrication system incorporating a pump, pipe, and semiconductor coating system as mentioned above. Yu et al further recognize the fabrication

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system used in performing photolithography processes whereby the wafer is processed with the photoresist coating, exposed, and later developed in a wafer track (see col. 1, lines 11-34). Yu et al are silent concerning the wafer track including a heat treatment unit for heat-treating the wafer and a transport element or robotic arm for transferring the wafer between the units. However, it was known in the art, at the time the invention was made, to incorporate into a semiconductor fabrication system, at least one heating unit for preheating and post heating of a treated wafer as well as provide for at least one transport element for transferring the wafer to the various treatment units (i.e., photoresist, developing, etc.) as evidenced by Akimoto (see col. 5, lines 1-37). It would have been obvious to one of ordinary skill in the art to provide a heating unit and transfer element as taught by Akimoto in the semiconductor fabrication system of Yu et al in order to enable preheating and post heating of the wafer as well as enable the wafer to be transferred to the various treatment units without the need of an operator.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose the state of the art with respect to semiconductor fabrication systems: Kao et al (US 6,338,361) and Fujimoto (US 6,113,695).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura Edwards whose telephone number is (571) 272-1227. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Laura Edwards
Primary Examiner
Art Unit 1734

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September 3, 2005